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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/877,684	06/17/97	VAUGHAN G	96B035/2

IM22/0411

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EXAMINER	
PASTERCZYK, J	
ART UNIT	**PAPER NUMBER**
1755	16

DATE MAILED: 04/11/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/877,684	Applicant(s) Vaughan et al.
	Examiner J. Pasterczyk	Group Art Unit 1755

☒ Responsive to communication(s) filed on *Jan 28, 2000* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-8 and 10-32* is/are pending in the application.

Of the above, claim(s) *6-8, 10-12, 22-29, and 31* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-5, 13-21, 30, and 32* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims *1-8 and 10-32* are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

1. This Office action is in response to the appeal brief filed 1/28/00 and refers to the final rejection mailed 3/29/99.

2. The abstract of the disclosure is objected to because it is not descriptive of the invention as now claimed. Correction is required. See MPEP § 608.01(b).

3. The amendment filed 2/8/99 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the deletion of "0" on p. 2, l. 33, and the deletion of "covalently" on p. 3, l. 10. The deletion of "0" now requires the metal complex be heteroleptic instead of possibly also being homoleptic. Deletion of "covalently" from the specification appears to be more than to correct a typographical error. Applicants' drawing attention to the structures of p. 15 is not probative, since in those structures the metal could be in the 4+ oxidation state with the C=N double bonds being misprinted as double instead of single. Hence it is not clear what the correction is supposed to be. The amendment to the abstract may also be seen as new matter if applicants attempt to use this amendment to introduce support materials other than those originally in the specification into either the claims or specification.

Applicant is required to cancel the new matter in the reply to this Office action.

4. Claims 1-5, 13-21, 30 and 32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application

was filed, had possession of the claimed invention. The specification as originally filed required that there be a covalent bond between the transition metal of the metal complex and the E atoms. This was found on p. 3, l. 10 as well as in the formulas of p. 15, table I. Claims 1 and 13 now require that there be merely a "bond" of whatever type between these two elements. This bond could be covalent, ionic, dative, van der Waals, or of any other type known in chemistry. This represents a broadening of the scope of protection sought by the claims beyond that which was originally supported by the specification. Applicants may wish to assert that the bond between the metal atom and the E atom was dative; however, this is not at all clear since a dative bond in inorganic chemistry, as opposed to organic chemistry as applicants attempt to point out by reference to a 22 year old textbook of organic chemistry, is normally drawn as an arrow from the atom donating electrons to the atom receiving the electrons, and no such arrow symbol was found in the structural figures of the preferred compounds for the transition metal portion of the claimed catalyst "system". Note the newly-cited references for how they correctly draw dative bonds in inorganic compounds. It is not clear from the specification what the intended correction was to be; *in re Oda*, 443 F.2d 1200, 170 USPQ 268, 272 (CCPA 1971). For instance, the actual formulas in table I could have been of some sort of Zwitterionic structures, or the entire formulas could have been some sort of ionic species. The nickel atoms could have been in the 4+ oxidation state and the double bonds between the carbon and nitrogen atoms could have been misprinted and really intended to be single bonds. It is not clear from the specification just what was intended.

5. Claims 1-5, 13-21, 30 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 13, the preamble recitation of intended use "for polymerization of olefin monomers" carries no patentable weight; *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990); *In re Tuominen*, 213 USPQ 89 (CCPA 1982); *In re Pearson*, 494 F.2d 1399, 181 USPQ 641 (CCPA 1964); *In re Zierden*, 162 USPQ 102 (CCPA 1969). As applicants pointed out in their appeal briefs, MPEP 2111.02 requires that in composition claims, intended use must result in a structural difference between the prior art and the claimed invention. There is no structural difference here recited. If applicants attempt to add the structural difference of the addition of an activator compound other than those already claimed, i.e. those of claims 17-19 and 21, this may result in a finding of an election by orignal presentation if the amended claims include new species which broaden the scope sufficiently to require searching in new subclasses, which was the purpose of the original restriction requirement. Further in these claims, it is still not clear against what the group 9, 10 or 11 metal complex is "stabilized"; is it hydrolysis? Oxidation? Some other particular reaction with a particular reactant? In the appeal brief, applicants appear to wish to have it both ways, with the compound being stabilized against decomposition (whatever that means), but unstable enough to engage in olefin polymerization catalysis (which may be viewed as a form of decomposition since the product formed with the olefin is not the same as the starting material). It is suggested that

--bonded to-- be used instead since the entire entity is a molecule, and reciting further the identity of L makes it unclear if this L is the same bidentate ligand as that "stabilizing" the metal complex. Further in the preambles, above the first formula, "the Group 9, 10 or 11 metal complex" strictly lacks antecedent basis since it is "stabilized by a bidentate ligand". At the end of the recitation of the identity of the L group, it is not clear what is meant by "the oxidation state of MX_r is satisfied"; does this mean that the oxidation state of the entire LMX_r molecule is neutral? If so, this appears to conflict with the recitations of claims 17 and 21, in which the metal-containing species is a cation. If it has some other meaning, it is requested that applicants point out where in the specification this term is clearly defined. Applicants appear in the appeal brief to be confusing "oxidation state" which is a term normally applied to the metal atom, with "charge" which is a term normally applied to the overall neutral or ionic moiety. In the fifth line from the end of both independent claims, insert a hyphen between "hydrocarbyl" and "containing". In the fourth line from the end of each of these claims, "or other univalent anionic ligand" is both omnibus and vague and indefinite, since there is no disclosure of what these particular ligands might be, and one of ordinary skill in the art would be forced to perform numerous burdensome experiments in order to discover what they might be that actually function in the manner intended for the composition; see *In re Gardner*, 166 USPQ 138 (CCPA 1970). Applicants' pointing to other members of the Markush group as illustrating what such ligands may be is merely prolix.

In claims 30 and 32, it is not clear about what entity this "square planar geometry" is "stabilized", or whether this is for the resting state or active species of some particular molecule,

particularly a catalyst which by definition is reacting with something else at the moment it is a catalyst, or whether this includes the particular species as it is supported on the solid support, which would likely distort whatever geometry the species had in solution or the solid state by itself.

In claim 19, it is still not clear what is meant by an "anion precursor"; is the entity itself to become the anion, or does it cause something else to become an anion? This is particularly pertinent since this precursor is recited as being a halide salt, and halides are the entities that normally become anions. What applicants appear to mean is that the cocatalyst ionizes the transition metal species to a cation, and that counter anion is non-coordinating to the resulting transition metal species, probably due to sterics about the atom on the anion which bears the formal negative charge as well as the electronegativity of the preferred fluorine atoms. Note claims 17 and 18 in this regard.

Claims 17 and 21 appear to conflict with claims 13 and 1 from which they depend in the recitation that the "oxidation state of MX_r is satisfied" versus that the metal is in a cationic species in these dependent claims.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 1-3, 5, 13-15, 30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Sommazzi as cited in and for the reasons of record found in paragraph 12 of the first Office action.

Sommazzi is a statutory bar to the patentability of the above claims. Arguments as to the intended use of the composition of Sommazzi are moot with regard to this ground of rejection, being more suitable to a 35 USC 103 rejection. The composition of Sommazzi still reads on that of the present claims; note especially col. 4, l. 40 through col. 5, l. 12 of the reference, which describes the ligand which would correspond to L of the present claims, with X of the present claims corresponding to the carbamate or amine ligands of Sommazzi, particularly given the omnibus language of claims 1 and 13 with regard to the identity of these ligands. Applicants in their appeal brief clearly mistake hydroformylation with the reaction carried out by the Sommazzi catalysts, mistake the metal compound of Sommazzi's example 3 with the actual catalyst of example 4 which includes the diphosphine ligand reading on the present variable L, and do not claim any structure which would distinguish the present claims from the prior art. The examiner further notes that there is no activator in the present claims besides that of claims 17-19 and 21, nor is a metal-carbon bond required by the present claims, nor is the actual structure of the metal compound claimed; only its stoichiometric formula is claimed.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-5, 13-21, 30 and 32 are rejected under 35 U.S.C. 103(a) as being obvious over Brookhart et al., USP 5,866,663 (hereafter referred to as Brookhart) (note ancestry data).

Brookhart discloses the present invention substantially as claimed; see abstract; col. 1-33, col. 38, top; col. 51, bottom; especially examples 98, 433 and 434 which disclose use of supports with the metal compound, contrary to applicants' assertion in their appeal brief.

Brookhart lacks teaching of the amount of metal compound on the support compared as micromoles per gram support.

However, such a parameter is easily within the skill of the routineer in the art to vary, depending on how active he wanted the supported catalyst to be when it was used in e.g. slurry or gas phase polymerizations in e.g. the UnipolTM process. The examiner notes that no declaration or data appear to be of record showing any criticality of the amount of catalyst loading on the support.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Brookhart with a reasonable expectation of obtaining a highly-useful olefin polymerization catalyst with the expected benefit that the catalyst could be used in heterogeneous polymerization reactors.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art newly-cited discloses the proper manner of drawing dative bonds in inorganic compounds.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is (703) 308-3497. Our fax number is 305-5433.

Mark L. Bell
Supervisory Patent Examiner
Technology Center 1700

J. Pasterczyk

April 7, 2000